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UNITED STATES
DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE
Yellowstone NATIONAL PARK

(FILES)

FILE NO. 143

MONTHLY

REPORT

February, 1932

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HORACE M. ALBRIGHT,
Director.

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DEPARTMENT OF THE INTERIOR

NATIONAL PARK SERVICE

YELLOWSTONE NATIONAL PARK

YELLOWSTONE PARK, WYO.

OFFICE OF THE SUPERINTENDENT

March 3, 1932

The Director,
National Park Service,
Washington, D. C.

Dear Mr. Director:

Following is a report of the activities of the Yellowstone National Park for the month of February, 1932:

000 - General

010 - Extremes of temperature and battles with snow and wind to keep roads open in Mammoth and from Mammoth to Gardiner characterized the month of February. While February, 1931, was a notably mild month with no zero temperatures recorded at Mammoth, February, 1932, provided a wide variety of temperature. The first brought 7.2 of new snow followed by strong winds which caused heavy drifting. The park equipment was not adequate to handle such drifts and it became necessary to borrow a bulldozer from the camp of Stevens Bros., contractors. This bulldozer went into action on February 9 and was used frequently throughout the month. Without it, it would have been impossible to keep even the roads around Mammoth open, and the bulldozer was invaluable in clearing the road to Gardiner.

There were seven days on which the temperature went below zero at Mammoth, the night of the 13th-14th brought a temperature of 15° below zero - the minimum of the month. Knowing that the groundhog had seen his shadow on February 2, the residents settled back for more winter and were surprised by the arrival of a mock spring with days of warm weather and rapid thawing. The maximum temperature reached was 55° on February 28. This warm weather dissipated much snow at Mammoth and in the interior of the park.

020 - General Weather Conditions

Attached hereto is "Summary of Weather Conditions at Mammoth Hot Springs," and Form 1030 "Monthly Meteorological Summary" prepared by Mr. H. T. Lathrop, Meteorologist at Mammoth Hot Springs, for the month of February.

DEPARTMENT OF THE INTERIOR

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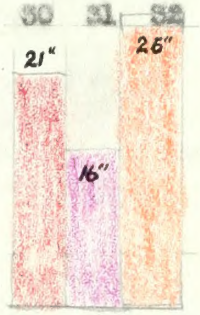
021 - In the park

With the exception of the last week of the month cold weather was the order of the day. The last week was very warm and clear, causing snows over the entire park to settle considerably. A great deal of Mammoth, due to the warm weather, has been clear of snow and bare ground is in evidence. All roads in the park with the exception of the Mammoth-Gardiner section remain closed. The following table discloses the various snow depths over Yellowstone National Park according to drainage:

Yellowstone Drainage	1930	1931	1932	1933
Buffalo Ranch	7	14	24	24
Canyon	40	17	36	66
Cooke	33	21	30	41
Cold Creek	--	--	30	49
Upper Slough Creek	20	17	24	46
Lower Slough Creek	--	16	24	46
Tower Falls	10	18	23	24
Hellroaring	9	8	26	22
Soda Butte	15	19	14	14
Thorofare	45	--	36	38
Lower Miller Creek	--	--	24	36
Upper Miller Creek	--	--	30	49
Lake	33	15	32	38
Cabin Creek	34	--	30	28
Park Point	--	15	30	40
Cache Creek	--	--	40	60
Crystal Springs	--	--	36	48

Average snow depths

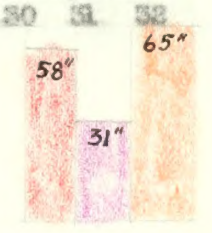


Madison River Drainage	1930	1931	1932
Old Faithful	32	14	46
Fountain	--	--	34
Madison Junction	--	14	34
Riverside	30	16	38
Norris	27	16	40
Grayling Creek	--	23	36

Average snow depths

Snake River Drainage				
Two Ocean Plateau	75	--	66	90
Snake River	41	28	45	70
" " 7-M.P.	76	34	85	103
Fox Creek	40	--	30	73
Aster Creek	70	32	68	86
Heckler River	46	32	64	79
Cascade	--	--	85	102
Boundary Creek	--	--	66	75
South Riverside	--	--	84	90

Average snow depths



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Gallatin River Drainage	1930	1931	1932	1933
Gallatin Station	35	21	27	38
Shoshone River Drainage				
Sylvan Pass	--	--	70	15ft-25ft. drifts
Sylvan Pass R. S.	30	19	39	45

022 - In the approaches to the Park

The Gardiner-Livingston Road was in good condition the entire month. The Gallatin-West Yellowstone road remains practically the same as reported last month. The West Yellowstone-Ashton road remains somewhat the same as last month, with the snow averaging about 4 feet in depth. McGinn's ranch, 14 miles below West Yellowstone, is completely drifted over. The east approach road is open with the exception of the last 16 miles to the Sylvan Pass Ranger Station. The south approach roads are all closed. However, there is a good sled road from Moran to Jackson and over Teton Pass. Togotee Pass road is closed from Moran to within 12 miles of Dubois. Snow depths at Moran are 38" and at Jackson 14".

023 - In Nearby States

The heavy thaw of the last week in February has taken nearly all the snow off the ground in the surrounding States except in the mountainous country.

Gallatin River Stations	1940	1939	1938
Gallatin Gateway	82	81	89
Yellowstone River Stations			
Sylvan Pass	--	--	70
Sylvan Pass B. S.	80	10	89

USE - In the mountains to the north

The Gardiner-Livingston road was in good condition the entire month. The Gallatin, West Yellowstone road remains practically the same as reported last month. The West Yellowstone-Ashton road remains passable the same as last month, with the snow averaging about 4 feet in depth. Hebgen's round, 14 miles below West Yellowstone, is completely drifted over. The most mountain road is open with the exception of the last 12 miles to the Sylvan Pass Summer Station. The main approach roads are all closed. However, there is a good sled road from Lovell to Jackson and over Teton Pass. Togepee Pass road is closed from Dubois to within 12 miles of Ingels. Snow depths at Moran are 10" and at Jackson 14".

USE - In Nearby States

The heavy thaw of the last week in February has taken nearly all the snow off the ground in the mountains but there still remains considerable.

100 - Administration

110 - Status of Work

The absence of one member of the organization due to an accident, the absence of another member on leave and several absences due to illness kept the remainder of the organization very busy, but it was possible to keep the work in most departments up to date.

Superintendent Toll was in Denver until February 8 when he left for inspections in and around Arizona, not expecting to return to Denver until early March.

120 - Park Inspections by

121 - Acting Superintendent

Acting Superintendent Edwards made the annual inspections around headquarters during February and in addition made a trip to Bozeman, Montana, on February 19 to attend the Montana Road Conference. Park Engineer Lord also attended this conference. Mr. Edwards also made trips to Livingston on land and American Legion party matters, on February 15, 17 and 26.

123 - National Park Service officers

Mr. H. L. Tillett, Chief Accountant of the National Park Service, and his assistant Mr. Herbert Wooten, both of the Washington office, arrived in the park on February 20 and remained for the balance of the month.

130 - Finance and Accounts

	Appropriated	Expended to Date	Balance
41/2433 Yellowstone N.P., 1931-32	$ 430,660.00	$341,370.63	$148,659.77
Encumbered		55,225.60	
Balance	$ 430,660.00	$397,223.31	$ 93,436.09
40/1436 Yellowstone N.P., 1930-31	$ 497,715.00	$495,283.11	$ 2,431.89
Encumbered		432.38	
Balance	$ 497,715.00	495,[illegible].49	1,[illegible].51
40/2433 Yellowstone N.P., 1929-30	$ 448,700.00	447,[illegible].37	1,365.63
Encumbered		32.27	
Balance	448,700.00	447,[illegible].66	1,334.34
4 K 436 Roads and Trails, National Parks	2,[illegible],303.72	1,369,148.69	1,213,154.83
Encumbered			
Balance	2,[illegible],303.72	1,[illegible],148.69	1,213,154.83

	Appropriated	Expended To Date	Balance
4 & 470 National Park Service, Donations	$ 100,211.63	$ 100,178.34	33.29
Encumbered	- - - -	- - - -	- - -
Balance	$ 100,211.63	100,178.34	33.29
41/2406 Forest Protection and Fire Prevention	$ 18,300.00	14,225.25	2074.75
Encumbered		231.44	
Balance	$ 16,300.00	14,456.69	1843.31
41/2406 Emergency Reconstruction & Fighting Forest Fires, 1931-32	$ 121,333.49	121,333.49	- - - -

140 - Labor Situation

Except for half a dozen men who were employed on snow removal during the period of strong winds and heavy drifting, our own forces working with the minimum number of men handled all park work. Applications of all kinds continued to choke the mail, and since selection of the summer staff was well under way, it was necessary to discourage most of the applicants.

150 - Equipment and Supplies

The Storehouse received and distributed 5 carloads of egg coal to the quarters, shops and office buildings. A few items have been re-stocked in our grocery department. In order to prevent the water from running into the grocery basement, and causing damage to stock, the snow was hauled away, by truck. This was necessitated by the thawing weather of the past week. A new double floor of fir has been laid in the Shipping Room. The Physical Inventory of Equipment has been practically completed.

170 - Plans, Maps & Surveys

Work under this item consisted of the completion of three final construction reports, partially unfinished at the close of last month and the preparation of five additional final reports. Final construction reports have now been submitted for all completed projects.

180 - Circulars, Placards, Publicity Bulletins, Etc.

No circulars were issued during February. The January-February issue of Nature Notes was mailed out on February 10. This issue was prepared entirely by the ranger department. No press releases were mailed out, but wires were sent to the United Press and the Associated Press regarding the proposed airplane trip over the park by Chief Ranger Eappley and Mr. L. E. Orr of the Fox Movietone News.

200 - Maintenance, Improvements and New Construction

Following is a report of the activities under the supervision of the Engineering Department for the month of February, 1938:

210 - Road Maintenance

Snow removal on the Gardiner-Mammoth road and at headquarters constituted the principal maintenance activity for the month. Much of this snow was too deep to be handled with tractor and graders and required hand shoveling and hauling away. Several minor slides in the Gardiner Canyon and at the gravel slope near Gardiner were cleaned up with hand labor. Two hundred feet of additional snow fence were erected during the month.

220 - Improvements

Carpenter Shop: The master carpenter was engaged in sanding floors in several quarters, and in laying a new floor in storehouse. He also built 1 room in the attic in the quarters occupied by the Chief Ranger.

Painting Department: Work of this department consisted of waxing floors, painting walls, putting in window glass, etc., in various quarters.

Electrical Department: The Chief Electrician was engaged in wiring and installing fixtures in several quarters, and in completing schedule showing electrical appliances in all Government buildings at Mammoth. Other work consisted of general maintenance. It was still necessary to shut down the hydro-electric plant each night from 1:30 a.m. to 5:00 a.m., on account of the shortage of water.

Plumbing Department: The work of this department consisted of the following: Mammoth: Operating and maintaining the water and sewer systems. Ten heating plants for heating the Administration Building, Garage, Mess House and employees' quarters were maintained and operated during the month. The following work was done daily: Hauling garbage and ashes, cleaning the Engineers' office, guest quarters, school house and bachelor building, also building fires in stoves. General maintenance to inside plumbing and heating systems. Repairs to sheet metal roofs and stoves in the various buildings. One hundred fifteen fire extinguishers were inspected and recharged when necessary. Two sheet metal flower stands were made and piped for running water, to be used at the Fishing Bridge Museum.

Garage: During the month of February the regular force was kept busy on major equipment overhaul, and during this time twelve trucks and one passenger car were thoroughly overhauled. In addition to the above the usual repair of equipment in operation and the repair of small tools has gone forward. Considerable time was spent during the month on snow removal by members of the garage force, thereby cutting down the quota of equipment overhauled.

230 - New Construction - Roads

No construction projects were active during the month.

260 - Landscape Work

Received more plans from the Landscape Division in San Francisco concerning structures for 1933 and 1934 estimates.

300 - Activities of other agencies in the park

Mr. George Whittaker operated his Mammoth store to accommodate local residents and was in Mammoth part of the month.

400 - Flora, fauna, and natural phenomena

410 - Ranger, naturalist and guide service

The Protection Department performed the usual activities for the month. No count of game was attempted.

Field Assistant Lahoue was on a ski trip for inspection of the various ranger stations throughout the park. He left Mammoth on February 10.

Chief Ranger Bagley, on February 22, in company with Dr. J. M. Carpenter and Leroy Gray of Casper, Wyoming, left Mammoth on skiis for a trip through the Park. Dr. Carpenter and Mr. Gray were interested in securing pictures and seeing conditions of the park during the winter months. They were joined at Norris by Assistant Lahoue, who traveled with them to the Canyon. From Canyon Mr. Bagley and Mr. Lahoue left the party and went to the Slough Creek Ranches and the Buffalo ranch. They returned to headquarters on March 2. Dr. Carpenter and Mr. Gray were escorted by rangers from Canyon to Norris by the way of Snake River. From Norris they planned on traveling over Two-gotee Pass to Lafeyette where they will be met by car and return to Casper.

420 - Museum Service

The following report is submitted by the Acting Park Naturalist for the month of February:

I. Current Operation.

B. Ranger Naturalist staff

Of the ranger naturalists serving during 1931, sixteen have signified their intention of returning, if reappointed; thus leaving four or five vacancies. There are twenty-five new applications on hand for Ranger Naturalist positions. Practically all confidential reports on qualifications of applicants have been received, and a tentative selection has been made.

II. Permanent Projects

B? Nature Notes.

The January-February issue of Nature Notes was sent out at the end of the first week in February. This splendid issue, prepared entirely by the Ranger Department, was well and favorably received. A questionnaire was sent out with the Nature Notes to permit a revision of the mailing list before the next issue; 276 replies have been received, exclusive of Government

C. Library

The library room has been rearranged so as to house exclusively the library. The case containing the photograph negatives and albums has been placed

in Mr. Scherer's office where the stove formerly stood. A radiator has been placed on the opposite wall, and over it a shelf on which was placed the case containing the lantern slides. With these two cases moved out of the library room, the east wall space is available for shelving (now on hand). However, progress on this work, as well as the transfer of the library books from the Superintendent's office, has been held in abeyance pending settlement of the Yellowstone Educational Staff.

Books accessioned and classified total 542, bringing the total books accessioned up to 1500. Through the courtesy of the Livingston Library, the U. S. catalogues were made available for a week, during which time our entire list of books was gone over, and a list of 320 A.L.A. call numbers were found, for which orders will be placed. All books in the library were roughly classified and placed on the available shelf space. It is truly hoped that this project may be completed within the next month.

Current magazines received, 34.

New books received and accessioned, 2; pamphlets and bulletins, 18.

E. Museum Accessions

There were no museum accessions during February.

E. Museum Work

An index was made for the 1931 Nature Notes, mimeographed, and mailed to fifty people requesting it. Nature Notes' indexes were revised for the years 1923-1930, and were filed alphabetically.

Nature Notes, using as many issues as were available, were bound into 10 volumes for the library, to be loaned to the museums and other stations during the park season.

A rating plan was outlined for temporary Ranger Naturalists during their employment.

A suggested plan of organization for the 1932 field season was prepared.

The two flower and shrub and tree exhibit cases for the Fishing Bridge Museum are completed, except for the base board, the label holders and the painting.

An inventory was made of keys for the museum apartments and, where needed, extra ones were ordered.

A splendid red fox specimen was skinned.

Mrs. E. H. Bottler, of Emigrant, Mont., was interviewed, and considerable interesting information received. Mr. Bottler was a hunter with the Hayden Survey parties. The Bottler ranch was used as one of the station headquarters for the Hayden surveys. Freeman Everts was nursed at their ranch when brought out of the park.

F. Lantern Slides

Ten slides were sent to Educational Headquarters at Berkeley to be colored.

G. Equipment

Received one Riker plant press by purchase from Angel and Cash, Providence, R. I.

H. Photographs

The 13 volumes of photographs were checked and subject divisions completed (one book was added). All prints with no negatives were removed. The matching of duplicates and checking of negatives was completed and the pasting partially completed. An entirely new index for the 16 volumes was completed, with a separate index for each volume.

Negatives in circulation, 102.

Pictures showing winter conditions of Mammoth Springs and formations are appended to this report.

I. Publicity Clippings

No work was done on this project during the month.

J. Sales Publications (none)

K. Personnel

Assistant Park Naturalist Norman B. Scherer, Junior Park Naturalist Perma A. Baggley and Museum Caretaker Milfred J. Lund were on duty the entire month.

440 - Insect Control

Prints of all work completed upon the type map have been received and as soon as time permits, three colored sets will be prepared. One set each will be sent to the Director and Chief Forester, and one retained at park headquarters.

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The preparation of a forestry policy for Yellowstone National Park covering the local administration of all activities affecting the forests of the park was begun in February and will be completed as soon as possible. This policy will conform throughout with the Forestry Policy for the National Park Service.

Data taken from timber estimates, which were made last summer, has been computed and is being sent out to be attached to the Annual Forestry Report.

400 - Birds

Downy woodpeckers, magpies, ravens, Clarks Crows represent the main bird life for February. Several species of ducks were observed in the open waters throughout the month. The usual numbers of geese are prevalent on the Madison and Yellowstone Rivers. It was noted that the Golden Eye duck was predominant. On January 28, 18 swans were observed near the Mud Volcano. Reports from the Lake Ranger Station disclosed a total of 28 swans in the open water in that vicinity. It is believed that these swans are all trumpeters. The first signs of spring were noted on February 20 at Gardiner, where a robin was observed. One robin was observed at Hunks River on Feb.25.

470 - Animals

All the game animals came through February in fair condition. The heavy snows made necessary the feeding of game at Gardiner and the Game Preservation Ranch. The opening up of the ridges from the thaw the last week of the month has caused all of the game in the vicinity of Gardiner and the Game Preservation Ranch to leave for higher country and forage for themselves. The last hay fed on these ranches was on February 28. The condition of all animals was noted to be good.

Elk: Due to weather conditions no elk count was attempted during the month. Their condition is good and forage conditions, with the exception of the last week in the month, were very poor. The following table, based on the count of elk secured in January discloses some very interesting statistics on the numbers of these animals:

Locality		Bulls	Cows	Calves	Spikes	Cows & Calves	Unclass.	Total
Northern Herd (actual count)	1	409	2400	407	110	1142	4000	8568
Northern Herd (percentage)	2	12	73	12	3			
Gallatin Herd (actual count)	3	128	640	109	54		1015	1906
Gallatin Herd (percentage)	4	15	61	10	6			
Interior Park Herd (n.c.)	5	53	218	144	24		233	672
" " " (percentage)	6	13	60	25	5			
Total count (lines 1, 3 & 5)	7	990	3258	714	188	1142	5248	11143
Total count (percentage)	8	12	69	16	4			
Average per cent (1, 2, 4 & 5)	9	13	61	21	6			
Average per cent (1, 3 & 5)	10	15.5	66	18	4.5			
No. elk by sex, percentage basis (line 10)	11	1696	7343	2006	501			11143

left by February 22

Due to the fact that there was no more hay at the Game Preservation Ranch feeding was started at Gardiner on the same day. It was hoped that the elk, when the feeding was started at this latter place, would leave the Game Preservation Ranch but such was not the case. Approximately 400 stayed on the Game Preservation Ranch and about 600 more were on the feed grounds at Gardiner. It was necessary on February 20 to commence hauling hay at the rate of one ton a day from Mammoth to the Game Ranch in order to pull these elk through for the time being. Ten tons of hay were taken from Mammoth to the Game Ranch. The elk range in the vicinity of Gardiner had opened up to such an extent that on the 28th of the month feeding was discontinued as most of the elk had left for higher country. Several losses of elk, as noted to date, are as follows:

Game Preservation Ranch - 2 cows; 8 calves.
Norris - 2 cows
Shoshone Lake - 1 bull
Tower Falls - 3 cows; one calf
Beehler River - 3 cows
Gardiner - 3 cows; 4 calves
Slough Creek Ranches - 1 bull; 1 calf and 6 cows
Buffalo Ranch - 1 bull and 1 cow
Madison Junction - 1 cow

The two losses at Norris were two old cows that had entered the barn closing the door after them thus, after eating what hay was on hand, starved to death. The rest of these animals are noted as winter kills.

The middle of the month saw 1500 elk being fed at the two Slough Creek ranches. At the end of the month only 900 were left. There is sufficient hay on the Slough Creek Ranch to take care of all of the elk in that vicinity until the spring months.

Bids were put out for two carloads of hay, one to be paid for by the Park Service and one by the State of Montana. This hay will be stored and fed at the Game Preservation Ranch. With these two carloads of hay on hand no trouble is expected in keeping the elk in that vicinity through the balance of the winter.

One carload of 32 elk were shipped to Ely, Nevada, for propagation purposes in White Pine County. This shipment consisted of 15 calves, two spikes and 15 cows. Ely, Nevada, furnished their own convoys for this shipment.

Deer: The deer were well scattered during the month. However, their condition is noted as very good, with forage conditions fair. During the fore part of the month 45 deer were being fed daily at Mammoth on clover hay and cottonseed cake. Only 25 were being fed at the end of the month. Eleven deer were killed by coyotes along the Yellowstone River in the Hellroaring District. One winter kill at Tower Falls and two at Gardiner were noted.

Moose: Counts of moose for the Therofare country disclosed a total of 6[illegible]. Only 4 moose were counted in the Pechlar River District. Occasionally moose are seen here and there over the entire park, with several more in the Middle Fork of the Shoshone River out of Sylvan Pass. Their condition is noted as very good with forage conditions also good. It was noted at the end of February all bull moose had shed their antlers. One cow moose was found dead at the Therofare Station.

Antelope: A good count of antelope was impossible due to these animals being scattered in small bunches over the entire northern range. However, an attempted count on February 16 disclosed a total of 391. All animals seen were noted to be in very good condition with forage conditions fair. The location of those antelope counted is noted as follows:

Reese Creek road - 171
Game Preservation Ranch - 91
Hill Ranch - 76
Gardiner garbage dump - 53

Two antelope were killed by coyotes in the vicinity of Gardiner during the past month.

Sheep: The 21 sheep reported last month are still to be seen at Junction Butte near Tower Falls. A thorough check from Gardiner canyon to the mouth of Bear Creek disclosed 46 sheep on the 27th of the month. Some of these animals are known to be in the mountainous regions around Cooke but no counts are available. Their condition is excellent and forage conditions are good.

Buffalo: Nothing of importance to report.

Small Animals: 8 otter were observed - 6 at West Thumb and 2 at Pumice Point in the Lake District. Habitats of other years were visited by the Lake rangers but no signs of otter were to be seen. Signs of martem, weasels and snowshoe rabbits are being noted as numerous over the entire park. Several mink and beaver were noted in the Madison River.

Buffalo and Other Ranch Activities: The feeding of game was the main activity at all of the ranches during the month of February. At the Buffalo Ranch 100 tons of hay and 14 tons of cottonseed cake were fed to the buffalo. Sixty tons of hay were fed to the antelope, deer and elk at the Game Preservation Ranch. Approximately 20 tons were fed at Gardiner. Approximately 160 tons of hay were fed to the elk at the two Slough Creek ranches.

480 - Natural Phenomena

by Mr. Scherer
An extended trip/over the hot springs formations at Mammoth revealed the following conditions:

By Mr. Scherer

Hymen Terrace - Observed February 21 and daily since; very active on northeast face, with a large area covered with yellow and coral pink algae. No activity on the northwest side (the side toward Judge Holdrum's residence).
Diana -More active than during January; color - olive green.
Minerva Terrace - no activity, pool at top of terrace completely dry.
Blue Springs - basins filled, with little or no run-off. Large basin is deep green in color; small basin to east is very light blue in color.
Jupiter Terrace - active in only two places, the extreme north and south ends, flow about the same as during January.
Angel Terrace -activity about the same as during January. The water gushing from the crack in the trail now reaches one foot in height, as compared to six inches during January. This flow covers an area about 75' long by 75' wide, with yellow and coral pink colorings. The predominating colors on the mound are yellow and white, with a strong flow over the entire mound.
New Highland Terrace - little or no steam activity.
Orange Spring Mound - the overflow now wets the southeast and northwest faces. One small yellow area is present. The darker colors predominate.
White Elephant - same as for January.
Narrow Gauge - very little activity, almost quiescent.
Cleopatra - decidedly increased activity at the north end, with yellow and light green colors predominating; greatly increased flow.

The activity on the old terrace back of the Nichols' tennis court is about the same as during January.

The most notable changes during the month are the increased flow and color changes of Hymen and Cleopatra; and the changed colors in Blue Springs.

Pictures showing winter conditions of Mammoth Springs and formations are appended to the Naturalist's report for February.

Following is a report of observations by others during the month of February:

Morris Geyser Basin

Emerald Spring - Observation by Ranger Curtis Skinner on February 5.
At 11:25 A.M., erupted 20-30' high, played for four minutes.
At 12:25 P.M., erupted 20-30' high, played for four minutes.
At 1:25 P.M., erupted a maximum of 40', played for 6½ minutes.
At 2:26 P.M., erupted 30' high, played continuously for 45 minutes, and still playing when observations ceased.

Each time, the spring would drain to 10-12' below the surface after erupting. Color of water, muddy.

During the first, second and third eruptions observed, there was considerable run-off; during the fourth eruption there was no run-off.

Observation by Milfred J. Mead on February 21:

The funnel cavity was filled with water. Boiling vigorously from the three vents previously reported. Erupts 5-6' high for 3 to 5 minutes at intervals of about one hour. Water color, grayish green.

Shoshone Geyser Basin

Observations by Ranger Curtis Skinner February 21:

Location - Directly across Shoshone Creek from the snowmobile cabin, about one hundred feet from the edge of the creek, observed a geyser which erupted every two and one-half minutes. Height of eruption 15-20', length of eruption about one-half minute. The water is thrown out in a thin fan-like shower. The water is clear, and the deposit is very hard and siliceous, dark in color, battleship grey. This geyser has built up a cone about 6-8' high, which has a jewelled appearance.

Union Geyser did not play during visit. It has a group of three vents, somewhat like Lion in the Upper Basin. Average snow depth in basin - 77 inches.

Upper Geyser Basin

Observations by Ranger Curtis Skinner, February 22:

Lone Star Geyser, observed in eruption from 11:33 A.M. to 11:37 A.M. total 22 minutes. Depth of snow on divide between Shoshone Geyser Basin and Lone Star - 68 inches.

420 - Miscellaneous

There are 4 trappers on the North Fork of the Shoshone on the east side of the park who to date have taken a total of 18 coyotes, 14 marten and two cross foxes. The trapper at Thorofare left on February 22. His season catch consisted of 24 marten, 7 coyotes, 1 fox and 6 weasels. The two trappers in the Hellroaring District have taken 27 marten and 6 coyotes.

500 - Use of Park Facilities by the Public

510 - Increase or decrease in travel

Travel for the month consisted of 140 people, traveling in 45 cars, all entering via the northern entrance.

530 - Visitors

Mr. Robert Hill, Montana State game warden, visited headquarters on February 9.

Mr. Vernon Goodwin, President of the Yellowstone Park Lodge and Camps Company, and Mrs. Goodwin visited headquarters for a few hours on February 1.

February 6 Mr. L. E. Orr and Mr. James Porter of the Jam Handy Movietone News left the park, having completed their series of sound pictures of park features and wild animals.

600 - Protection

630 - Fire Protection

Fire Prevention: During the month of February all available statistical records of the 1931 fire season were assembled in the Chief Ranger's office, in order to prepare a fire atlas. This atlas is an analytical survey of all fire prevention, detection and suppression activities carried on in Yellowstone National Park during 1931. The statistics will be sent to Fire Control Expert J. A. Coffman early in March, for studies of this subject that he is making.

Several days were also spent in the Chief Ranger's office in preparing visibility maps.

An outline of all necessary work to be done in repairing, inspecting and assembling all fire equipment has been made. Considerable repair work such as sharpening tools, repairing saddles, oiling and assembling mess equipment, etc., has required the extra help of two rangers during part of February.

640 - Destruction of Predatory Animals

Only one coyote was killed during the month as compared with 9 in February last year. The total destroyed to date consists of 106, as compared with 75 last year. The annual coyote sale was held on February 24. Forty-three Government and 43 private hides were sold to the highest bidder. The Sharp Curio Shop of Livingston, Montana, who were bidding for the Stevens Fur Company of Denver, Colorado, were the successful bidder. The Government hides brought $5.35 each, and the private hides $5.10 each. It might be mentioned here that the next high bid was $4.00 and was made by Trapper Evans of Livingston, Mont.

900 - Miscellaneous

Hospital & Medical Service: Dr. Ivan F. Rudeaff reports 70 house calls and 68 office calls during the month of February.

Post Office: Business was practically normal for the winter, and nothing special to report.

Church Services: Services were held in the lodge room evening of Sunday, February 28, 1932, by Rev. A. E. Smith. Fifty new hymn books with notes were received and stored for summer use, there being already enough for the smaller congregations in winter. These were purchased with funds donated last fall by a few residents most interested.

On February 11 a son, William Lindsley Arnold, was born to Mr. and Mrs. E. R. Arnold.

A Valentine dance was held in the Canteen on February 13 and was well attended.

Honorable John W. Baldrum, U. S. Commissioner for Yellowstone National Park, and Miss Susan Baldrum left Yellowstone on February 22. Judge Baldrum will spend several months at Hot Springs, Arkansas, before returning to the park.

Very truly yours,

Guy D. Edwards
Acting Superintendent.

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JULY 1929)

UNITED STATES
DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE

TRAVEL REPORT

[redacted] National Park for the month of [redacted]

	This Month	This Travel Year To Date	This Month Last Year	Last Travel Year To Date	Increase for Travel Year	
					Number	Percent
PRIVATE TRANSPORTATION:						
Cars first entry,	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Cars reentry,		[redacted]		[redacted]	[redacted]	[redacted]
Motorcycles,				1	-1	-100
Total motor vehicles,	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Persons entering via motor vehicles,	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Persons entering via other private transportation,						
Total persons entering via private transportation,	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
OTHER TRANSPORTATION:						
Persons entering via stages,						
Persons entering via trains,						
Persons entering otherwise,						
Total other transportation,						
GRAND TOTAL ALL VISITORS,	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]

	This Year	Last Year	Increase	
			Number	Percent
Automobiles in public camps during month,				
Campers in public camps during month,				

UNITED STATES
DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE

TRAVEL REPORT

	This Month	This Period (1st Day to Date)	This Year Through Last Day of Period	Last Year Through Same Day	Increase or Decrease	
					Number	Percent
Total persons entering via motor vehicles						
Persons entering via other public transportation						
Total persons entering via public transportation						
Persons entering via stages,						
Persons entering via trains,						
Persons entering [illegible],						
Total other transportation,						
GRAND TOTAL ALL VISITORS,						

	This Year	Last Year	Increase or Decrease	
			Number	Percent
Overnight stays in public camps during month				
Overnight stays in public camps during month				

UNITED STATES

DEPARTMENT OF THE INTERIOR

NATIONAL PARK SERVICE

STATUS OF AUTHORIZED PROJECTS

YELLOWSTONE National Park for the Month of [illegible], 1938

Description of Projects	Percent Constructed To Date	Percent Constructed This Month	Percent Constructed Last Month	Probable Date of Completion
1 - Mammoth-Norris Road	100	0		
1.1- Madison-Old Faithful	100	0		
1.4- Signs	99	0		
1.5- Post Comm't. Maint.	50	0		
1.6- Bear Feeding Grounds	100	0		
1 - Trails, Old Faithful	95	0		
1 - Surface Betterments	95	0		
1 - Parking Areas, Old Faithful	100	0		
1.1- Artist Point Cleanup	100	0		
1.2- " " Oiling	100	0		
1.1- Norris-Madison Oiling	100	0		
1.2- " " Cleanup	100	0		
1.3- " " Bridge	100	0		
1 - Tower Fall Water System	100	0		
1 - E.Ent.-Lake Butte Cleanup	100	0		
1 - Canyon-Tower Jct. Cleanup	100	0		
1 - Ballatin Road, Surf.& Oiling	1	0		
1.8- Loop Betterment	100	0		
1.9- " "	100	0		
1 - Mammoth Water System	100	0		
1 - " Sewer System*	100	0		
1 - Cleanup, Firehole Cascades-Obsidian Cliff**	100	0		
1.1 Cleanup, Inspiration Point***	100	0		
1.2 " E.Ent.-Lake Butte***	100	0		
Staining guard rail & seal coating oil surfacing	95	0		
Staining guard rail, E.Ent. Road	95	0		
Obsidian Cliff-Cascades Oiling	0	0		
Canyon-Tower Jct.Cleanup & Oiling	0	0		

*year program, first year's work completed.
** completed insofar as funds allotted, work accomplished about 40%.
*** " " " " " " " " 30%.

UNITED STATES

DEPARTMENT OF THE INTERIOR

NATIONAL PARK SERVICE

STATUS OF AUTHORIZED PROJECTS

..... National Park for the Month of ....

Description of Projects	Percent Constructed To Date	Percent Constructed This Month	Percent Constructed Last Month	Date of Completion

0-159
y, 1931)

UNITED STATES

DEPARTMENT OF THE INTERIOR

NATIONAL PARK SERVICE

STATUS OF PERSONNEL

[redacted] National Park for the Month of [redacted]

	This Month		This Month Last Year	
	Appointed	Non-Appointed	Appointed	Non-Appointed
ber of employees beginning of month	74	9	69	8
ber of additions	0	4	2	3
otal	74	13	71	11
ber of separations	0	2	0	1
ber of employees close of month	74	11	71	10
ber of promotions during month	0		0	
regate amount of annual leave taken	85		82	
regate amount of sick leave taken	64		59	
egate amount of leave without pay	0		0	

UNITED STATES

DEPARTMENT OF THE INTERIOR

NATIONAL PARK SERVICE

STATUS OF PERSONNEL

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DEPARTMENT OF THE INTERIOR

NATIONAL PARK SERVICE

REPORT OF PARK REVENUES

Yellowstone National Park for the Month of February, 1932

	This Year	Last Year
Park revenue on hand beginning of month,	$ 21.60	$ 2.50
Received,	1,289.33	542.53
Total,	$ 1,310.93	$ 545.03
Remitted,	830.88	510.03
On hand close of month,	$ 480.05	$ 35.00

Park revenues received this year to date,	$ 219,105.73
Park revenues received last year to date,	246,527.65
Decrease,	27,421.92
Per cent of decrease,	11.1232

DEPARTMENT OF THE INTERIOR

NATIONAL PARK SERVICE

REPORT OF PARK REVENUES

Yellowstone National Park for the Month of February, 1938

	Year	Year
Park revenue on hand beginning of month.	$ 21.60	$ 2.50
Received.	1,380.05	642.55
Total.	$ 1,401.65	$ 645.05
Remitted.	880.85	310.05
On hand close of month.	$ 480.05	$ 35.00

Park revenues received this Year to date. 219,106.74

Park revenues received last Year to date. 246,527.65

Decrease. 27,421.91

Per cent of decrease. 11.11

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UNITED STATES

DEPARTMENT OF THE INTERIOR

NATIONAL PARK SERVICE

REPORT OF TELEPHONE AND TELEGRAPH BUSINESS

YELLOWSTONE National Park for the Month of FEBRUARY, 1932

	This Month	This Month Last Year	Increase	Percent Increase
OCAL BUSINESS				
iles of circuit maintained	552	528	4	0075
o. of telephones connected	186	177	9	05
o. of measured service calls				
o. of other local calls.				
otal No. of local calls.	4492	3188	1304	40
eak load in calls per day.	227	168	59	35
eceipts from measured service calls.				
eceipts from coin boxes.				
eceipts from telephone rental.				
TOTAL RECEIPTS				
ONG DISTANCE BUSINESS				
o. Outbound calls.	61	57	4	07
o. Inbound calls	32	47	15	30
TOTAL LONG DISTANCE CALLS				
eak load in calls per day.	7			
ceipts from Long Distance business.				
LEGRAPH BUSINESS				
essages via Western Union				
essages via.				
TOTAL MESSAGES				
eceipts from telegraph business.				
o. of money transfer messages.				
o. of money transefer receipts.				
OTAL RECEIPTS TELEPHONE & TELEGRAPH DEPT-				

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UNITED STATES

DEPARTMENT OF THE INTERIOR

NATIONAL PARK SERVICE

*ELECTRICITY GENERATED, SOLD, USED, ETC.

YELLOWSTONE National Park for the Month of FEBRUARY, 1938

	This Month	This Travel Year To Date	This Month Last Year	Last Travel Year To Date	Increase for Travel Year Number	Increase for Travel Year Percent
Current generated,	46000.	526630.	49090.0	541368.0	-14738.0	-027
Sold to park operators,	804.	31096.	698.1	31219.8	-10123.8	-10
Sold to others,						
Furnished to other Governmental agencies,						
Used by National Park Service, lost in transit, etc.,	45196.	478534.	48387.9	480182.2	4698.1	000
Total current generated,	46000.	526630.	49090.0	541368.0	-14738.0	-027

Amount receivable from the sale of electricity, $ 40.20

*Indicated by K. W. H.

DEPARTMENT OF THE INTERIOR

NATIONAL PARK SERVICE

*ELECTRICITY GENERATED, SOLD, USED, ETC.

National Park for the Month of

	This Month	Travel Year To Date	Month Last Year	Travel Year To Date	Travel Year	
					Number	Percent
ld to park operators, . . .						
n to others, ...						
ed by National Park Service,						
lost in transit, etc., . . .						
Total rental generated,						

t receivable from the sale of electricity, ... $

SUMMARY OF WEATHER CONDITIONS
at
MAMMOTH HOT SPRINGS, YELLOWSTONE NATIONAL PARK

February, 1932

February averaged well above normal in temperature, 21.2°, the normal for a February of 29 days being 19.7°. The coldest period ran from the 11th to the 19th, with the extreme minimum for the month, -15°, on the 14th, which is far from the extreme of the 46 years of record, -36°. The 20th showed a return to above normal temperature, and every day in the month thereafter was above normal. On the 28th a maximum temperature of 55° was recorded, establishing a new record for February maximum temperatures, the record of maximum temperatures covering 45 Februaries. The departures from normal during the month greatly cut down the deficit produced by the cold month of January. At the end of February the average daily departure from normal temperature since January 1 was -1.2 degrees.

Precipitation amounted to approximately half the normal amount, 0.70 inch, against a normal of 1.39. The total depth of snow was 12.4 inches, and a heavy blanket of snow lay on the ground all month. The average depth at 6 p.m. of the 1st was 27.5 inches, the greatest depth of the month, following a snowfall of 9.9 inches on January 31st and February 1st. The least thickness of the snow cover was on the 29th, 14.5 inches. Precipitation amounting to .01 inch or more of water occurred on 11 days. There were 21 cloudy days, five partly cloudy, and only 3 clear days. The average daily percentage of sunshine was 49.

A strong wind movement distinguishes the month. The average hourly wind velocity was 10.8 miles per hour, with values adjusted to the corrected 4-cup anemometer basis, which very considerably reduces them as compared with records in years prior to 1932. The highest velocity registered on this basis was 32 miles per hour from South, on the 10th.

W. T. LATHROP, Meteorologist.

. 1030—Met'l.

U. S. DEPARTMENT OF AGRICULTURE, WEATHER BUREAU.

MONTHLY METEOROLOGICAL SUMMARY.

ion, Yellowstone Park, Wyo. ; *month,* February , 1932.

Temperature. (Degrees Fahrenheit.) Max.	Min.	Mean.	Precipitation. (In inches and hundredths.)	Character of day.	Per cent of Possible Sunshine
29	14	22	.38	Cloudy	0
23	1	12	T.	Pt.Cldy.	77
20	-8	6	0	Pt.Cldy.	85
22	-1	10	T.	Pt.Cldy.	66
26	17	22	.01	Cloudy	32
30	23	26	T.	Cloudy	5
33	22	28	.02	Cloudy	42
30	25	28	.03	Cloudy	27
32	23	28	.03	Cloudy	25
33	14	24	.06	Cloudy	11
20	10	15	.05	Cloudy	38
16	3	10	.05	Cloudy	33
11	-7	2	.02	Cloudy	28
16	-15	0	0	Clear	100
22	-5	8	0	Cloudy	46
19	-4	8	.01	Cloudy	42
22	-4	9	0	Clear	100
28	0	14	0	Clear	100
32	3	18	0	Cloudy	42
30	17	24	0	Pt.Cldy.	53
35	21	27	T.	Cloudy	21
39	17	28	0	Cloudy	70
42	25	32	0	Cloudy	44
44	26	35	0	Cloudy	54
40	26	33	T.	Cloudy	63
40	32	36	T.	Cloudy	25
51	32	42	0	Pt.Cldy.	95
55	28	42	0	Cloudy	85
41	20	30	.04	Cloudy	16
0.5	12.2	21.2	Total. 0.70		49

ATMOSPHERIC PRESSURE.

(Reduced to sea level; inches and hundredths.)

Mean 30.094; highest 30.56 date 27
lowest 29.25, date 10

TEMPERATURE.

Highest 55, date 28; lowest -15, date 14
Greatest daily range 31, date 14
Least daily range 5, date 8

MEAN FOR THIS MONTH IN—

1871	82	93	15.6	04	23.8	15	26.4	26	27.1				
1872	83	94	12.2	05	17.0	16	24.4	27	22.9				
1873	84	95	19.2	06	23.8	17	19.5	28	19.8				
1874	85	96	25.2	07	26.8	18	18.2	29	15.7				
1875	86	97	20.5	08	23.2	19	19.2	30	27.6				
1876	87	14.0	98	25.2	09	21.0	20	21.4	31	25.2			
1877	88	26.7	99	10.8	10	15.2	21	24.4	32	21.2			
1878	89	19.5	00	----	11	14.6	22	12.9	33				
1879	90	17.6	01	18.0	12	22.4	23	16.4	34				
1880	91	14.2	02	26.7	13	10.3	24	26.2	35				
1881	92	24.2	03	12.8	14	20.1	25	27.6	36				

Normal for this month 19.7
Absolute maximum for this month for 45 years 55
Absolute minimum for this month for 46 years -36
Average daily excess (+) or deficiency (−) of this month as compared with the normal +1.5
Accumulated excess (+) or deficiency (−) since January 1 -72
Average daily excess (+) or deficiency (−) since January 1 -1.2

PRECIPITATION.

Total this month 0.70; snowfall 12.4
Greatest precipitation in 24 hours 0.39, date Jan.31-Feb
Greatest 24-hour snowfall 7.2, date 1
Snow on the ground at end of month 14.5

TOTAL PRECIPITATION THIS MONTH IN—

1871	82	93	0.79	04	1.50	15	0.39	26	1.05				
1872	83	94	1.12	05	0.60	16	0.59	27	0.86				
1873	84	95	0.34	06	1.84	17	1.83	28	0.37				
1874	85	96	2.07	07	0.58	18	2.03	29	0.77				
1875	86	97	0.80	08	1.22	19	1.64	30	0.69				
1876	87	4.65	98	1.21	09	0.65	20	1.02	31	0.25			
1877	88	2.02	99	3.40	10	1.61	21	0.62	32	0.70			
1878	89	1.93	00	1.65	11	1.10	22	1.84	33				
1879	90	6.65	01	0.72	12	0.48	23	0.59	34				
1880	91	2.79	02	0.61	13	0.52	24	0.77	35				
1881	92	2.10	03	0.25	14	0.78	25	1.29	36				

Normal for this month 1.39
Excess (+) or deficiency (−) of this month as compared with the normal -0.69
Accumulated excess (+) or deficiency (−) since January 1 -1.4

MEAN RELATIVE HUMIDITY (Percentage).

6 a. m., 72.7; local noon, 58.6; 6 p. m. 62.3

WIND.

Prevailing direction Southwest, total movement 7,490 miles; average hourly velocity 10.8; maximum velocity (for five minutes) 32 miles per hour, from South on 10.
Maximum wind velocity this month since 1904
(By three-cup anemometer) 41, Northwest, 1923

WEATHER.

Number of days, clear 3; partly cloudy 5; cloudy 21
on which .01 inch, or more, of precipitation occurred 11

MISCELLANEOUS PHENOMENA (dates of).

Auroras none; halos: solar 12, 19, 23, lunar 13
Hail none; sleet none 27; fog none
Thunderstorms none
*Frost: light ----; heavy ----; killing ----

NOTE.—"T" indicates trace of precipitation.

*utumn frosts are not recorded after the occurrence of "killing," except in Florida and along the immediate coast of the Gulf of Mexico.

owest observed relative humidity,
29%, on 24th, at noon.

W. T. LATHROP,
Meteorologist, *Weather Bureau.*

GOVERNMENT PRINTING OFFICE

Form No. 1030—Met'l.

U. S. DEPARTMENT OF AGRICULTURE.

WEATHER BUREAU.

MONTHLY

METEOROLOGICAL SUMMARY.

STATION

MONTH

, 19

8—1650 U. S. GOVERNMENT PRINTING OFFICE: 1929